

Wesley Bland

Curriculum Vitae

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EDUCATION

Doctor of Philosophy, Computer Science May 2013
University of Tennessee, Knoxville, TN
Master of Science, Computer Science May 2009
University of Tennessee, Knoxville, TN
Bachelor of Science, Computer Science May 2007
Tennessee Technological University, Cookeville, TN

PROFESSIONAL EXPERIENCE

Postdoctoral Appointee, Argonne National Laboratory, Argonne, IL
Dr. Pavan Balaji (balaji@mcs.anl.gov) April 2013 – Present

- Lead implementation of ULFM in MPICH.
- MPICH developer.
- Design and implement fault tolerant libraries and applications.

Graduate Research Assistant, Innovative Computing Laboratory, University of Tennessee, Knoxville, TN
Dr. Jack Dongarra (dongarra@eecs.utk.edu), Dr. George Bosilca (bosilca@eecs.utk.edu) August 2009 – April 2013

- Developed User Level Failure Mitigation (ULFM), a proposal to the MPI forum discussing fault tolerance in MPI, and the accompanying implementation based on Open MPI.
- Developed Checkpoint-on-Failure (CoF), a fault tolerant protocol using MPI-3 techniques to checkpoint applications after a failure rather than periodically throughout the application lifecycle.
- Worked with various libraries and applications to help implement fault tolerance using ULFM.

Intern, Oak Ridge National Laboratory, Oak Ridge, TN
Dr. Richard L. Graham (rlgraham@ornl.gov) May 2009 – August 2010

- Worked on the initial design and implementation for Scalable Tools Communications Infrastructure (STCI).
- Interacted with Open MPI development team to investigate integration of STCI.

Dr. Stephen L. Scott (scottsl@ornl.gov) Summers 2005 – 2008

- Implemented new features and bug fixes for Cluster Command and Control (C3).
- Implemented command line installation interface for Open Source Cluster Application Resources (OS-CAR).
- Investigated and implemented fault injection tools for virtual environments.

Dr. Walter Dykas Summer 2004

- Implemented log analyzer scripts to parse security logs and search for anomalies

Graduate Teaching Assistant, University of Tennessee, Knoxville, TN
Dr. Jack Dongarra (dongarra@eecs.utk.edu) Spring Semester 2009

- Teaching assistant for CS 594 – Scientific Computing for Engineers
- Assisted in lectures, grading assignments, and supervising laboratory activities.
- Led class construction of two Linux clusters.

Dr. David Straight (straight@eecs.utk.edu) Fall Semester 2007 – Spring Semester 2008

- Teaching assistant for CS 100 – Introduction to Computer Science
- Supervised and lectured for laboratories teaching basic computer science skills to non-majors.
- Spring 2008 – Head TA, supervising all other TAs for the lab sections.

PUBLICATIONS

Journal Papers

1. Bland, W., A. Bouteiller, T. Herault, J. Hursey, G. Bosilca, and J. Dongarra (2013). An evaluation of User-Level Failure Mitigation support in MPI. *Computing* 95(12), 1171–1184.
2. Bland, W., P. Du, A. Bouteiller, T. Herault, G. Bosilca, and J. J. Dongarra (June 2013). Extending the scope of the Checkpoint-on-Failure protocol for forward recovery in standard MPI. *Concurrency and Computation: Practice and Experience*.

Papers in Conference Proceedings

1. Yang, C., W. Bland, J. Mellor-Crummey, and P. Balaji (2014). Portable, MPI-interoperable Coarray Fortran. In: *Proceedings of the 19th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*. PPOPP '14. Orlando, Florida, USA: ACM, pp.81–92. ISBN: 978-1-4503-2656-8. DOI: 10.1145/2555243.2555270. <http://doi.acm.org/10.1145/2555243.2555270>.
2. (Aug. 2012). In:
3. Bland, W. (2012). Enabling Application Resilience with and Without the MPI Standard. In: *Proceedings of the 2012 12th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID 2012)*. CCGRID '12. Washington, DC, USA: IEEE Computer Society, pp.746–751. DOI: 10.1109/CCGrid.2012.25.
4. Bland, W., A. Bouteiller, T. Herault, J. Hursey, G. Bosilca, and J. J. Dongarra (2012). “An Evaluation of User-Level Failure Mitigation Support in MPI”. In: *Recent Advances in the Message Passing Interface*. Ed. by J. L. Traff, S. Benkner, and J. J. Dongarra. Vol. 7490. Lecture Notes in Computer Science. Springer Berlin Heidelberg, pp.193–203. DOI: 10.1007/978-3-642-33518-1_24.
5. Naughton, T., W. Bland, G. Vallee, C. Engelmann, and S. L. Scott (2009). Fault Injection Framework for System Resilience Evaluation: Fake Faults for Finding Future Failures. In: *Proceedings of the 2009 Workshop on Resiliency in High Performance*. Resilience '09. Garching, Germany: ACM, pp.23–28. DOI: 10.1145/1552526.1552530.
6. Vallee, G., T. Naughton, H. Ong, A. Tikotekar, C. Engelmann, W. Bland, F. Aderholdt, and S. L. Scott (2008). “Virtual System Environments”. In: *Systems and Virtualization Management. Standards and New Technologies*. Ed. by L. Boursas, M. Carlson, W. Hommel, M. Sibilla, and K. Wold. Vol. 18. Communications in Computer and Information Science. Springer Berlin Heidelberg, pp.72–83. DOI: 10.1007/978-3-540-88708-9_7.
7. Bland, W., T. Naughton, G. Vallee, and S. Scott (2007). Design and Implementation of a Menu Based OSCAR Command Line Interface. In: *High Performance Computing Systems and Applications, 2007. HPCS 2007. 21st International Symposium on*, pp.25–25. DOI: 10.1109/HPCS.2007.14.
8. Vallee, G., T. Naughton, W. Bland, and S. Scott (2007). Automatic Testing Tool for OSCAR Using System-level Virtualization. In: *High Performance Computing Systems and Applications, 2007. HPCS 2007. 21st International Symposium on*, pp.26–26. DOI: 10.1109/HPCS.2007.9.

Tech Reports

1. Bland, W., G. Bosilca, A. Bouteiller, T. Herault, and J. Dongarra (2012). *A proposal for User-Level Failure Mitigation in the MPI-3 Standard*. Tech. rep. Tech. rep., Department of Electrical Engineering and Computer Science, University of Tennessee.

PhD Thesis

1. Bland, W. (2013). “Toward Message Passing Failure Management”. PhD thesis. University of Tennessee, Knoxville.

Tutorials

1. Balaji, P., R. Thakur, R. Lusk, and W. Bland (2013). *Parallel Programming with MPI*. Argonne National Lab full day tutorial on MPI. http://www.mcs.anl.gov/~balaji/tutorials/argonne13_mpi.php.

Invited Talks

1. *Fault Tolerant Runtime Research @ ANL* (2014). Lawrence Berkeley Laboratory Visit. http://www.mcs.anl.gov/~wbland/slides/2014-03-04_LBL_Visit.pptx.
2. *Proposed Fault Tolerance for MPI-4* (2014). Lawrence Livermore Laboratory Visit. http://www.mcs.anl.gov/~wbland/slides/2014-02-10_LLNL_MPI4FT_Presentation.pdf.
3. *Fault Tolerant Runtime Research @ ANL* (2013). 10th Joint Laboratory for Petascale Computing Workshop. <http://www.mcs.anl.gov/~wbland/slides/jlpc13.pdf>.
4. *User Level Failure Mitigation in MPI* (2012). Resilience Workshop co-located with Euro-Par. <http://www.mcs.anl.gov/~wbland/slides/Resilience12.pdf>.

STUDENTS SUPERVISED

- *Chaoran Yang* May - November 2013
CaF-2.0 and MPI-3 interoperability
- *Brian Skjerven* September - December 2013
Chapel and MPI-3 interoperability
- *Xiuxia Zhang* 2013 - 2014
Fault Tolerance in VOCL

HONORS

- Best Paper – International European Conference on Parallel and Distributed Computing (Euro-Par) – 2012
- Outstanding STARS Mentor – University of Tennessee ACM Student Chapter – 2012
- Outstanding Undergraduate Research Award – Tennessee Technological University Research Day – 2007
- Who's Who Among Students in American Universities – 2007
- Dean's List – Tennessee Technological University – 2003 - 2007

SERVICE

Chairs

- Proceedings Chair - International Conference on Computer Communications and Networks (ICCCN) – 2014
- Publicity Chair - International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2) – 2014

Program Committee

- IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid) – 2015
- Workshop of Resiliency in High Performance Computing (Resilience) – 2014
- International Supercomputing Conference Tutorials Committee (ISC) – 2014
- IEEE International Conference on Cloud Computing Technology and Science (CloudCom) – 2013 - 2014

Journal Reviewer

- Journal of Parallel and Distributed Computing (JPDC) – 2013
- IEEE Transactions on Cloud Computing (TCC) – 2013 - 2014
- IEEE Transactions on Computing (TC) – 2013 - 2014

External Reviewer

- ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) – 2014
- High Performance Computing Conference (HiPC) – 2013
- IEEE Cluster (Cluster) – 2013
- International Conference on Parallel Computing (ParCo) – 2013
- International Conference on High Performance Computing (HiPC) – 2013
- International Parallel & Distributed Processing Symposium (IPDPS) – 2013
- Heterogeneity in Computing Workshop (HCW) – 2012

Professional

- Working Group Co-Chair – Fault Tolerance Working Group, MPI Forum – 2012 - Present
- SCinet Student Volunteer - International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing) – 2009 - 2012

University of Tennessee, Electrical Engineering and Computer Science Department

- Mentor – STARS Alliance Program – 2011 - 2013
- President – University of Tennessee ACM Student Chapter – 2007 - 2008

MEMBERSHIPS

Association for Computing Machinery – 2004 - Present
IEEE – 2013 - Present

INTERESTS

Fault Tolerance, Communication Runtimes, High Performance Computing, Distributed and Parallel Computing